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ABSTRACT

This document describes a modified Delphi technique for use in establishing research needs and priorities at the institutional level. Six steps are essential to the technique: identification of needs, collection of rankings of the relative importance of the identified needs by institutional administrators, calculation of the rank of identified needs using an importance/consensus method, feedback of rankings to campus administrators, planning of actions with campus administrators, and reporting of developed plans to all administrators. The modified Delphi technique relies on individual or small group interviews during the first round of information gathering and relies on much more face-to-face interaction during later rounds of data organizing and reporting than does the traditional Delphi technique. It is suggested that this process is both efficient and effective as a method for obtaining institutional consensus on research needs and priorities. Appended is a computational example for calculating the importance/consensus rankings for use in the modified Delphi process. (JDS)

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RESEARCH BRIEF

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A Modified Delphi Technique for Obtaining Consensus on Institutional Research Priorities

July, 1977

In many institutions decision-makers individually request research studies as they perceive a need for them. Reflecting "crisis oriented" management, such requests are often accompanied by imminent deadlines and ignore activities in progress. Trying to satisfy the needs of several administrators and the rigors of research methodology creates conflicting pressures on researchers. According to Gubasta (1976), such conflicting pressures contribute to the diffusion of institutional research resources, diminished work quality, limited creativity and isolation from institutional constituents.

Institutional decision making processes also complicate the task of selecting and assigning priorities to institutional research projects. For example, Stake (1972) contends that effective decision-makers use unknown formulas and weightings to process a great deal of information in assigning priorities to objectives. Similarly, Reinow's (1973) review of behavioral studies indicates that organizational decision-making is generally undisciplined and conducted without regard to systematic tools or techniques.

Furthermore, according to Gilmour (1976), differences in the decision-making processes used are a source of potential conflict between institutional decision-makers and institutional researchers. Decision-makers typically use political or compromise oriented approaches and seek piecemeal or incremental solutions which are satisfactory. Researchers are generally apolitical, use rational-analytically oriented approaches and seek comprehensive solutions which are optimal.

Fortunately, several investigators have suggested aspects of a solution to the problem of selecting and assigning priorities to institutional research projects. Maier (1963) and Stake (1972), for example, contend that the availability of facts contributes to objective decision-making. Gubasta (1976) advocates meeting with key decision-makers to identify their needs, and Reinow (1973) argues that an optimal decision-making procedure would include rational and extra-rational elements.

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Similarly, Garner (1970) used a two step survey process to identify institutional research needs and priorities. First, he met with academic departments and administrative units of his institution. In these meetings he administered an Inventory for Institutional Research which, among other areas of concern, solicited extensive suggestions for areas in which research was needed. From the results of the Inventory, 15 of the most prominent suggestions for research were selected for a second survey where rank-order Priorities for Institutional Research were established.

In addition to survey methods such as Garner's, the delphi technique has been used widely to establish a variety of priorities in education (e.g. Curran, 1972 and Judd, 1972). Developed by the Rand Corporation, the delphi technique establishes consensus among experts without requiring face to face meetings. Instead, participants complete a series of questionnaires interspersed with controlled feedback (Helmer, 1966). Weaver (1971) contends that "... although Delphi was originally intended as a forecasting tool, its more promising educational application seems to be ... (as) a planning tool which may aid in pooling priorities held by members and constituencies of an organization (p. 271)."

A number of researchers have modified the original delphi technique in attempts to increase its efficiency or applicability. For example, in a study of priorities for research in education, Hughes (1975) used item-sampling procedures and generalizability theory analysis to reduce the time respondents spent completing questionnaires. In applying the technique, other investigators have reduced the number of iterations used.

A Modified Delphi Technique

Stemming from a desire for a more systematic method for establishing research needs and priorities and based upon this review of literature and an analysis of institutional decision-making processes, a modified delphi technique was designed and implemented. The six major steps included in this process are shown schematically in Figure 1. Each step is described briefly in this section of the paper.

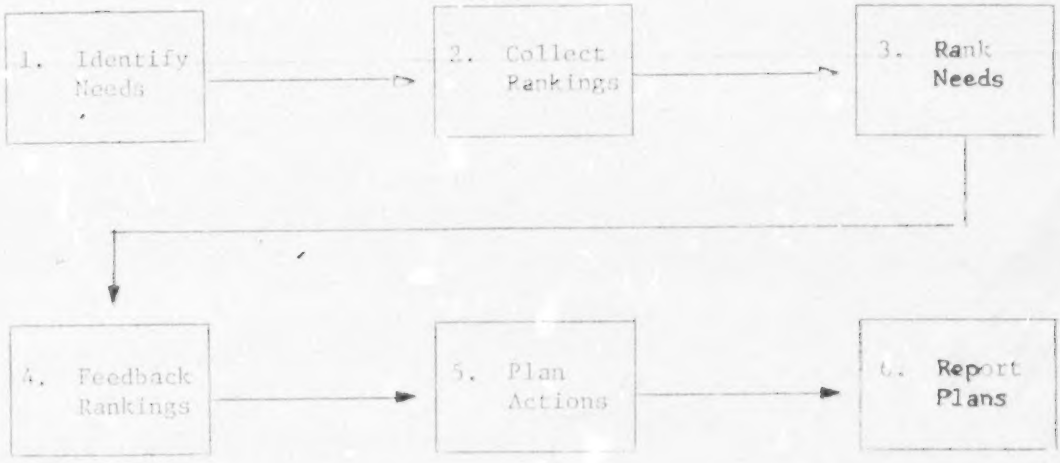

Figure 1. Major Steps in a Delphi Technique for Research Consensus

1. Identify Needs. Institutional research needs are identified through individual interviews with administrators with institution-wide responsibilities (campus administrators), small group interviews with a campus administrator and those administrators directly responsible to him, or a combination of these. These interviews should focus on identifying major unmet institutional and organizational unit needs for which institutional research may be useful. To minimize the development of a lengthy "Christmas wish" list, it may be necessary to limit the input of organizational unit administrators to their single, most pressing need.

2. Collect Rankings. A composite list is prepared of the research needs identified in the interviews. Next, all institutional administrators are asked, from their perspective, to rank the list of needs according to comparative institutional need. To make the ranking task manageable, the list of needs should not exceed 15 - 20 items.

3. Rank Needs by Importance/Consensus. The importance/consensus method (Baratta, 1974) is used to rank the research needs. Considering both the importance assigned by a group of respondents and the degree of consensus across respondents, the importance/consensus method is superior to either importance or consensus ranking methods for assigning research priorities.

   The six general steps in ranking needs by importance/consensus include:

   - First, calculate the importance rating for each need. The importance rating is the mean of responses for each need.
   - Second, calculate the consensus score for each need. Consensus is measured by Uhl's (1971) convergence score, which is the sum of the absolute value of each respondent's choice minus the importance rating for each need.
   - Third, rank the importance ratings from the most to the least important, assigning a rank of one to the need with the smallest mean rating.
   - Fourth, rank the consensus scores from greatest to least consensus, assigning a rank of one to the need with the smallest consensus score.
   - Fifth, sum importance and consensus ranks for each need.
   - Sixth, re-rank the sum of ranks, assigning a rank of one to the item with the smallest sum of ranks.

   A computational example of these steps for ranking needs by importance/consensus is included in the Appendix.

   Importance/consensus ranking can be calculated for all administrators or for appropriate organizational sub-groups.

4. Feed Back Rankings to Campus Administrators. A summary table listing the research needs by importance/consensus can be distributed to administrators with campus wide responsibilities. The summary table may have a column heading for "Action Plan."

5. Plan Actions with Campus Administrators. In this step, the researcher meets with the group of campus administrators to discuss actions to be taken on each research need.

   A predetermined list of action choices may facilitate group decision-making. Action choices may include: research planning or conducting a study, research supporting a study conducted by one or more organizational units, employing a consultant to plan or conduct a study, or deferring a study for later review.

   If possible, the researcher should lead the discussion in which an action choice is made for each research need ranked.

6. Report Plans to All Administrators. After an action choice has been made for each research need, the researcher should report these plans to all administrators involved in the study. A two column summary table may be sufficient to communicate established priorities and action plans to all administrators who might request studies. The first column of the summary table would be a ranking of the research needs by importance/consensus. The second column would show the action planned for each need listed. Having participated in planning the actions, campus administrators can provide decision-making rationales to those administrators responsible to them.

A Comparison of Traditional and Modified Delphi Techniques

Table 1 presents a general comparison of this modified delphi with the traditional delphi technique. The step by step comparison which follows includes the rationale for each modification.

TABLE 1

A Comparison of Traditional
and
Modified Delphi Techniques

Round	Traditional Delphi	Modified Delphi
1	Open-ended questionnaire	Individual or small group interviews
2	Instrument to all	Instrument to all
3	Instrument + Feedback to all	Feedback to campus administrators
4	Instrument + Feedback + Justification of divergent views to all	Plan actions with campus administrators
5	Final report to all	Final report to all

Interviews, rather than an open-ended questionnaire, are used to identify research needs in the first step of the modified technique. In contrast to a questionnaire, an interview permits immediate idea clarification and can focus on "need to know" rather than "nice to know" concerns. In addition, by aggregating several small, related projects into one longer one, or vice versa, interviews facilitate a consistent level of generality across expressed needs.

A face-to-face approach to identifying needs is advocated by Garner (1970) and by Gubasta (1976). Furthermore, this approach is consistent with Maier's principle that the idea-getting process should be separated from the idea-evaluation process. (1963, p. 247).

Following the collection and analysis of individual responses from all participants, written results are fed-back to participants. At this stage the modified delphi differs from the traditional in that feedback is given to campus administrators only rather than to all participants. In a hierarchical organizational structure, campus administrators are responsible for integrating the objectives of their organizational units with the objectives of the institution. They are responsible, also, for allocating resources in harmony with established priorities. Campus administrators, therefore, are the locus of decision-making regarding objectives and priorities. In traditional delphi, all participants are chosen on the basis of their expertise, hence all participants are the locus of decision-making on objectives and priorities. In contrast to another iteration of written participant response and feedback, the next step in the modified delphi is to plan actions with campus administrators in a face-to-face discussion.

Maier contends that decision-making involves quality and acceptance dimensions. Quality refers to how well a decision squares with objective facts. Acceptance refers to the degree to which the group that must execute the decision accepts it. In Maier's view, high quality and high acceptance are both needed for effective decisions. (1963, pp. 252 and 253).

Considerable research has demonstrated the superiority of group over individual decisions and has fostered the use of "management teams" in "participative decision-making" (e.g. Buttenmiller (1972) and Leveille (1972).

Research has demonstrated, also, that change is more acceptable when the people affected by it have helped to create it (e.g. Pollack, 1971). Indeed, in an experimental test of nominal, delphi and interacting decision-making processes, Van De Ven (1972) found that face-to-face groups perceived greater satisfaction from their participation than did delphi participants.

Hence, planning actions in a face-to-face meeting with campus administrators should lead to more effective decisions than would another round of written participation by all administrators.

The final step in both traditional and modified delphi is to circulate a final written report to all participants. This step concludes the process by informing participants of the outcomes of the process.

Summary

In terms of administrators' time, cost, effort required and outcomes, a modified delphi technique which alternates face-to-face with written interaction to provide both rational and emotional outlets, provides an efficient and effective method for obtaining institutional consensus on research needs and priorities.

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APPENDIX

A Computational Example
of
How to Calculate Importance/Consensus Rankings

A. Calculate Importance Ratings

(Arithmetic Mean of Item Responses)

e.g, Responses

5
3
4
5
2

19 ÷ 5 = 3.8 Sample Importance Rating

B. Calculate Consensus Scores

(Sum of Absolute Values of each Respondent's choice - Importance Rating)

e.g, Choice	Importance Rating	Absolute Value
5	3.8	1.2
3	3.8	.8
4	3.8	.2
5	3.8	1.2
2	3.8	1.8

5.2 = Sample Consensus Score

C. Rank Importance Ratings

Need	Importance Ratings	Importance Rankings
1	3.8	4
2	2.6	2
3	3.0	3
4	1.4	1
5	4.2	5

D. Rank Consensus Scores

Need	Consensus Scores	Consensus Ranking
1	5.2	4
2	5.6	5
3	3.0	2
4	2.4	1
5	3.8	3

E. Sum Importance + Consensus Ranks

Need	Importance Rank	Consensus Rank	Sum of Ranks
1	4	4	8
2	2	5	7
3	3	2	5
4	1	1	2
5	5	3	8

F. Re-Rank the Sum of Ranks

Need	Sum of Ranks	Importance/Consensus Ranks
1	8	4.5
2	7	3
3	5	2
4	2	1
5	8	4.5

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